

## PATENT ABSTRACTS OF JAPAN

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**(54) METHOD AND SYSTEM FOR RETRIEVING DATABASEPROGRAM FOR  
RETRIEVAL MANAGEMENT AND RECORDING MEDIUM THEREOF**

(57)Abstract:

PROBLEM TO BE SOLVED: To realize database retrieval for enabling a user to easily obtain retrieval results data retrieved according to a retrieval command from a terminal device.

SOLUTION: A terminal device 1 has a browser program and transmits the retrieval command to a center device 3 on the basis of retrieval condition data inputted via the browser program. The center device 3 outputs a retrieval instruction to a database retrieving device 4 on the basis of the retrieval command received from the terminal device. The center device 3 stores retrieval results data from the database retrieving device 4 in a predetermined storage destination and transmits to the terminal device 1 storage destination display data which show the storage destination of the retrieval results data. The terminal device 1 displays the retrieval results data from the storage destination and transmits a

request command for downloading the retrieval results data on the basis of designation of storage destination display data displayed by the browser program.

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## CLAIMS

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[Claim(s)]

[Claim 1] A center apparatus is a database search method which performs database retrieval according to a find command which received from a terminal unit and said terminal unit has a browser program transmit to said center apparatus based on search condition data inputted via this browser program and said find command said center apparatus based on said find command which received from said terminal unit output search directions to a database searching device and said center apparatus Retrieval result data from said database searching device is saved to a preservation destination which was able to be decided beforehand Transmit to said terminal unit and a preservation destination indicative data which shows said preservation destination of said retrieval result data said terminal unit A database search method characterized by transmitting a demand command of download of said retrieval result data from said preservation destination based on specification of said preservation destination indicative data displayed by said browser program.

[Claim 2] The database search method according to claim 1 specifying specification of said preservation destination indicative data by a click action by POINTING DEVICE by which said preservation destination indicative data displayed by said browser program was connected to said terminal unit.

[Claim 3] The database search method according to claim 1 or 2 wherein said center apparatus has a screen management program is the given order and transmits screen-display data of a search condition input screen and a retrieval-result-data preservation destination display screen to said terminal unit.

[Claim 4] If a monitoring program which supervises an end of search of said

center apparatus is executed and said end of search is detected by this monitoring program maintaining a keep alive state said terminal unit The database search method according to claim 3 wherein transition to said retrieval-result-data preservation destination display screen is performed.

[Claim 5] The database search method according to any one of claims 1 to 4 said center apparatus's having a data conversion program changing it into a data format which was able to determine said retrieval result data beforehand and saving it to said preservation destination decided beforehand.

[Claim 6] A center apparatus is a data base retrieval system which performs database retrieval according to a find command which received from a terminal unit and said terminal unit Have a browser program which inputs a search condition for database retrieval and transmits said find command and said center apparatus A search directions output means which outputs search directions to a database searching device based on said find command which received from said terminal unit A preservation destination display data transmitting means which transmits a preservation destination indicative data which saves retrieval result data from said database searching device to a preservation destination which was able to be decided beforehand and shows said preservation destination of said retrieval result data to said terminal unit A data base retrieval system wherein it \*\*\*\* and said terminal unit transmits a demand command of download of said retrieval result data from said preservation destination based on specification of said preservation destination indicative data displayed by said browser program.

[Claim 7] The data base retrieval system according to claim 6 wherein said center apparatus has a screen management program is the given order and transmits screen-display data of a search condition input screen and a retrieval-result-data preservation destination display screen to said terminal unit.

[Claim 8] If a monitoring program which supervises an end of search of said center apparatus is executed and said end of search is detected by this monitoring program maintaining a keep alive state said terminal unit The data base retrieval system according to claim 7 wherein transition to said retrieval-result-

data preservation destination display screen is performed.

[Claim 9]The data base retrieval system according to any one of claims 6 to 8 said center apparatus's having a data conversion programchanging it into a data format which was able to determine said retrieval result data beforehandand saving it to said preservation destination decided beforehand.

[Claim 10]A search administrative program characterized by comprising the following for performing a database search method which performs database retrieval according to a find command which received from a terminal unit.

A search directions program code which outputs search directions to a database searching device based on said find command which received.

A screen management program code which transmits screen-display data of a search condition input screen and a retrieval-result-data preservation destination display screen to said terminal unit in the given order at least.

A preservation destination indicative-data transmitting program code which transmits a preservation destination indicative data which saves retrieval result data from said database searching device to a preservation destination which was able to be decided beforehandand shows said preservation destination of said retrieval result data.

A data conversion preservation program code which changes said retrieval result data into a data format which was able to be decided beforehandand is saved to said preservation destination decided beforehand.

[Claim 11]A recording medium which recorded said search administrative program according to claim 10 and in which computer reading is possible.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention is about a database search method and a data base retrieval system. A search administrative program and its recording medium. In particular, a center apparatus is related with the database search method which performs database retrieval according to the find command which is received from the terminal unit. A data base retrieval system, a search administrative program and its recording medium.

[0002]

[Description of the Prior Art] Before database retrieval by a computer is performed widely, database retrieval about various businesses such as the business used in a company, for example, technical relation and accounting relation is performed to the data managed by a Relational Database Management System (henceforth RDBMS) etc. using a terminal unit in the company via an inter-office-communications circuit. The user can print search results with a display or a printer on the monitor of a terminal unit. A user performs search processing etc. using the spreadsheet software performed on a personal computer in a lot of searched data when carrying out search processing etc. further.

[0003] On the other hand, search which used the WEB server as a center apparatus is also often performed these days. There is a system with which the data managed by RDBMS is searched via a WEB server from client terminal equipments such as a personal computer. A WEB server transmits an SQL (Structured Query Language) find command to a database server (henceforth a DB server) and search results are received from a DB server and transmitted to a client terminal. Every 20 affairs of the search results are displayed using the browser software for personal computers. When there are 21 or more affairs, it is clicking a what is called "next" button and the 21st affair or subsequent ones is displayed. When it judges whether \*\*\*\*\* is still more nearly required and there is the necessity, looking at search results, the user inputs the retrieval key word.

[0004]

[Problem(s) to be Solved by the Invention] as [ mentioned / when the search system using a WEB server was used in a company etc. / however / it / above /

search results ] -- it may not be user-friendly if 20 affairs are displayed at a time.

[0005] For example, he would like to see a lot of parts information data of hundreds of affairs and thousands of affairs by a list; there is also a thing needed with tabular format data. Such usage cannot be done only by 20 affairs being displayed at a time.

[0006] When wanting at tabular format data, the user did the data extraction request to what is called an information system section and had data extraction carried out. The data from a relational database in a predetermined format, for example, it is outputted by CSV and the user was passed by portable media, such as a floppy (registered trademark) disk and it had transmitted to the user's personal computer with the FTP (File Transfer Protocol) protocol.

[0007] However, such a method required time for program creation at the system part gate; it not only takes the time and effort a user requests to a system part gate but there was a problem of taking time by data acquisition also for a user further.

[0008]

[Means for Solving the Problem] Then, an object of this invention is to provide a database search method, a data base retrieval system and a search control program which can obtain retrieval result data easily and its recording medium.

[0009] In a database search method of this invention, a terminal unit has a browser program and passes a browser program. Based on inputted search condition data, a find command is transmitted to a center apparatus. A center apparatus outputs search directions to a database searching device based on a find command which is received from a terminal unit. A center apparatus saves retrieval result data from a database searching device to a preservation destination which was able to be decided beforehand and transmits a preservation destination indicative data which shows a preservation destination of retrieval result data to a terminal unit. A terminal unit transmits a demand command of download of retrieval result data from a preservation destination based on specification of a preservation destination indicative data displayed by browser program.

[0010] In a database retrieval system of this invention a terminal unit has a browser program which inputs a search condition for database retrieval and transmits a find command. A center apparatus is provided with the following. A search directions output means which outputs search directions to a database searching device based on a find command which received from a terminal unit. A preservation destination display data transmitting means which transmits a preservation destination indicative data which saves retrieval result data from a database searching device to a preservation destination which was able to be decided beforehand and shows a preservation destination of retrieval result data to a terminal unit.

And a terminal unit transmits a demand command of download of retrieval result data from a preservation destination based on specification of a preservation destination indicative data displayed by browser program.

[0011] According to such composition in database retrieval the user can get easily retrieval result data searched according to a find command from a terminal unit.

[0012] As for specification of a preservation destination indicative data in a database search method of this invention it is desirable to specify a preservation destination indicative data displayed by browser program by a click action by POINTING DEVICE connected to a terminal unit.

[0013] According to such composition a preservation destination indicative data can be specified by an easy click action and retrieval result data can be obtained easily. As for a center apparatus in a database search method or a database retrieval system of this invention it is desirable to have a screen management program to be the given order and to transmit screen-display data of a search condition input screen and a retrieval-result-data preservation destination display screen to a terminal unit.

[0014] According to such composition search of data acquisition etc. can be shown intelligibly for a user.

[0015] In a database search method or a database retrieval system of this invention a terminal unit When a monitoring program which supervises an end of

search of a center apparatus is executed and an end of search is detected by a monitoring program maintaining a keep alive state it is desirable to perform transition to a retrieval-result-data preservation destination display screen.

[0016] Since according to such composition the terminal unit can maintain the state of having the other party's initial entry and a display screen is changed according to an end of search the user can know a search state promptly.

[0017] As for a center apparatus in a database search method or a data base retrieval system of this invention it is desirable to have a data conversion program to change into a data format which was able to determine retrieval result data beforehand and to save to a preservation destination decided beforehand.

[0018] Since according to such composition retrieval result data is transmitted after changing into form of being easy to use database retrieval retrieval result data of this invention a user becomes easy [ processing treatment etc. ].

[0019] A search administrative program of this invention is provided with the following.

A search directions program code which outputs search directions to a database searching device based on a find command which received.

A screen management program code which transmits screen-display data of a search condition input screen and a retrieval-result-data preservation destination display screen to a terminal unit in the given order at least.

A preservation destination indicative-data transmitting program code which transmits a preservation destination indicative data which saves retrieval result data from a database searching device to a preservation destination which was able to be decided beforehand and shows a preservation destination of retrieval result data.

A data conversion preservation program code saved to a preservation destination which changed retrieval result data into a data format which was able to be decided beforehand and was decided beforehand.

[0020] A recording medium of this invention is a recording medium which



recorded a program and in which computer reading is possible.

[0021]According to such composition in database retrieval center apparatus with which the user can get easily retrieval result data searched according to a find command from a terminal unit is easily realizable.

[0022]

[Embodiment of the Invention]Hereafter an embodiment of the invention is described with reference to drawings.

[0023]Drawing 7 shows an embodiment of the invention from drawing 1.

[0024]Drawing 1 is a system configuration figure of the data base retrieval system in connection with this embodiment. 1 is client terminal equipment (henceforth a client). The center apparatus comprises two or more server apparatus. 2 is a WEB server device (henceforth a WEB server) 3 is an application server device (henceforth AP server) and 4 is a database server device (henceforth a DB server). It is connected by a communication line between the client 1 and WEB server 2 respectively between WEB server 2 and the AP server 3 and between the AP server 3 and DB server 4 and communication by a http protocol is performed.

[0025]Hereon explanations since it is easy the client 1 shows only one but two or more clients connected by the Internet or intranet may be connected to WEB server 2 by the side of a center apparatus.

[0026]The client 1 has browser software (program) such as a WWW browser and communication by protocols for file transfers such as a http protocol and a file transfer protocol is constituted possible. Furthermore the client 1 has an execution environment the program for script execution i.e. the JAVA (registered trademark) program for executing programs such as a JAVA (registered trademark) applet and Visual Basic (VB). Therefore the client 1 can receive the search ending flag monitoring program (script) mentioned later and can execute it by the program for script execution.

[0027]WEB server 2 has a httpd (http demon) program and has a function which supplies the data from the data transmission and the AP server 3 to the AP

server 3 according to a demand from the client 1 to the browser software of the client 1.

[0028]The AP server 3 has a search administrative program which includes at least the screen management program displayed on the display of the client 1 the retrieval processing control program executed with DB server 4 and conversion / preservation program for performing conversion of data and storage processing.

[0029]According to the retrieval situation of the demand from the client 1 and DB server 4 a screen management program is a program which manages a screen change which is mentioned later and performs management processing for transmitting screen-display data to the client 1 in the given order. A screen can make it able to change appropriately and search of data acquisition etc. can be shown intelligibly for a user. The user can perform request of search grasp of a retrieval situation processing of search result etc. being able to see a screen display by the browser software of the client 1 displayed under execution of this screen management program.

[0030]A retrieval processing control program is a program which processes the search directions to DB server 4 grasp of a retrieval situation reception of search result etc. according to the contents of the find command from the client 1. For example search directions are performed by generation and the generated transmission of a command of the find command which can perform DB server 4.

[0031]Data conversion and a storage processing program are programs which process conversion in a predetermined form of the data of search results preservation of retrieval result data etc.

[0032]DB server 4 has the retrieval program for performing a search of the data currently stored in the connected storage device (not shown) for example the program of a Relational Database Management System (RDBMS). DB server 4 has functions such as analysis of find command such as an SQL find command which received execution of search and an output of search results.

[0033]Although each of WEB server 2 mentioned above the AP server 3 and DB server 4 was explained as an isolated system or a part of these three servers

may be realized as one hardware item.

[0034]In the data base retrieval system constituted in this way a user specifies a database to operate and search the client 1 with and inputs a search condition etc.

[0035]Drawing 2 is an example of the search condition input screen. The screen of drawing 2 is a screen displayed after a user specifies the target database which should be searched. The directions or the demand from the client 1 is accepted it generates or chooses and the AP server 3 transmits the data for screen display to the client 1 so that this screen may be displayed on the display of the client 1. 11 is a window frame which appears on the display of the client 1. Two or more condition input fields 12, 13, 14, 15 and 16 corresponding to the structure of the database which the user specified as the window frame 11 are displayed on the portion shown by 17.

[0036]Here since it is easy the example which inputs conditions to four column name [ of tabular format data ] ABC and Dis shown in drawing 2. A user inputs the search condition data of a character number etc. into each input field and clicks the retrieval execution button 18 to it. A click of the search condition button 18 will supply the search condition inputted as the find command to the AP server 3 via WEB server 2.

[0037]If it says in detail and a user will specify the database of a retrieval object the screen of drawing 2 will be displayed. The script of a JAVA (registered trademark) applet is then transmitted to a client from WEB server 2 for example. This script is a motion of a WEB server etc. and a program which supervises a state and specifically is an end monitoring program of search which supervises the end of database retrieval.

[0038]If a user inputs a search condition and clicks the retrieval execution button 18 the find command generated based on search condition data is transmitted to DB server 4 via WEB server 2 and the AP server 3 and the client 1 and WEB server 2 will be in what is called a keep alive state. And in DB server 4 retrieval processing is performed based on the received search condition.

[0039]When the retrieval execution button 18 is clicked this end monitoring

program of search stored in the client 1 is also executed. If this program is a JAVA (registered trademark) applet the program for script execution for JAVA (registered trademark) will execute that script program.

[0040] A session object will be generated by the object generating means if WEB server 2 passes the AP server 3 and directs namely requires retrieval processing of DB server 4. And a session object supervises the executed situation of DB server 4 and changes a state variable according to the executed situation. The session object has a state variable which shows the state whether the retrieval processing of DB server 4 was completed via the AP server 3. A session object has the search ending flag "END" as one of the state variables for example and the client 1 supervises the search ending flag "END" of the session object in the AP server 3 with the end monitoring program of search. An end of the retrieval processing by DB server 4 will change the contents of the search ending flag "END" into "1" (end of search) for example from "0" (under search). The end monitoring program of search of the client 1 goes to read periodically the state variable in the session object of the AP server 3. If there is a retrieval processing demand from two or more clients a session object will be generated and only the number will check the state variable of a session object with which the end monitoring program of search of each client corresponds.

[0041] If the retrieval execution button 18 of drawing 2 is clicked as mentioned above a find command will be received in DB server 4 and retrieval processing will be started but the AP server 3 transmits the screen-display data for displaying the screen of drawing 3 on the display of the client 1 to the client 1. Drawing 3 is a figure showing the example of the display screen which shows a user that it is during the retrieval execution displayed on the client 1.

[0042] In drawing 3 21 is a window frame which appears on the display of the client 1. 22 is a subwindow in the window 21 and the character of "being under search now" is displayed. While this screen is displayed the user can be performing a search and can know not having carried out the end of search yet.

[0043] The AP server 3 does not produce what is called session timeout although

an indication of "being under search" is given to the client 1 and the session between a WEB server and a client is cut. That is the client 1 and WEB server 2 will have been in the state which maintained the communicative session i.e. what is called a keep alive state (state with the other party's initial entry).

[0044] If DB server 4 has the searched data while performing retrieval processing it will begin to send sequential retrieval result data to the AP server 3. If retrieval result data is received the AP server 3 will perform data conversion and storage processing and will change it into data format such as CSV and XML form. After retrieval processing is completed a file name is given and the changed data is stored in the preservation destination which is the field where the memory decided beforehand was decided beforehand. At this time the AP server 3 determines a file name automatically. For example the file name given at this time is a file name which the AP server 3 determined automatically using the random number generator etc. Even if it is not a file name of a random number the file name generated in the given order may be sufficient.

[0045] An end of the retrieval processing of DB server 4 will change the session status flags of a session object in the AP server 3.

[0046] The AP server 3 generates the screen-display data for displaying the screen of drawing 4 on the display of the client 1 according to the end of search. Drawing 4 is a figure showing the example of a screen for the end of search and the preservation destination of retrieval result data to be shown to a user. In drawing 431 is a window frame which appears on the display of the client 1. The file name mentioned above with the message "search was completed" for example ABC.XML is displayed on a screen. Link information is attached to the display portion of a file name. The mouse which is a pointing device of the client 1 is operated cursor is moved on a screen and a user does a click i.e. a click action for the portion of the file name.

[0047] Since what is called a link to the preservation destination mentioned above into the portion of the "ABC.XML" is stretched if a click is carried out the command which requires access i.e. transmission of data is transmitted to the link

destination. According to it the file data of a link destination is transmitted and the file downloads to the client 1.

[0048] If in other words the user of the client 1 clicks the portion of a file name "ABC.XML" on the screen of drawing 4 a file request will be outputted with a file transfer protocol from the client 1. The AP server 3 transmits the file by which the link was stretched to the client 1 by FTP i.e. a file transfer protocol.

[0049] When downloading the file transmitted with the file transfer protocol in the memory of the personal computer device of self the user can give a new file name and can also save data.

[0050] Thus since a display screen is changed into the screen of drawing 4 according to the end of search the user can know the end of search promptly.

[0051] Although the AP server 3 has transmitted the screen-display data for displaying the screen of drawing 4 together with file name information to the client 1 after the end of search of DB server 4 in the example mentioned above the status-change flag is changed when the client 1 goes to read the session status flags of AP server it may be made to read file name information and the picture data of drawing 4 from the AP server 3.

[0052] Drawing 5 is a figure showing the example of the screen for asking a user about whether a search-results file is downloaded. In the client 1 if a file is sent with a file transfer protocol the screen of drawing 5 will be displayed. In drawing 5 41 is a window frame which appears on the display of the client 1. When the character "whether a file is downloaded" is read and a user clicks the YES button 42 the Popup Window which is not illustrated appears and specifying a preservation destination and a file name is directed. By specifying them the user can save retrieval result data by a desired file name to a desired field.

[0053] Thus since the assigning screen of a preservation destination is displayed separately and a preservation destination can be specified even if a server determines a file name by random numbers etc. as shown in drawing 3 the user can specify the self file name to desire. Data will not be downloaded if NO button 43 is clicked in drawing 5.

[0054]It may be made to display not a procedure as shown by drawing 3drawing 4 and drawing 5 but a screen like drawing 6 on the display of the client 1. Drawing 6 is a figure showing the example of a screen for the preservation destination of the retrieval result data which should be accessed after the end of search to be shown to a user. That is if a user transmits search directions from the client 1 in the AP server 3 the screen-display data of drawing 6 will be transmitted to the client 1. Drawing 6 is the display "access to ABD.XML in 30 minutes." If the user of the client 1 accesses the file in 30 minutes according to the display the file is generated and he can see the data. The display time of these 30 minutes is the maximum search time (time which was calculated when time beyond it was not exceeded however it might start or is considered) of DB server 4 and is decided beforehand. Since DB server 4 has ended search in the maximum search time if a user goes later to access the specified file he can download retrieval result data. The file name which self expects a file also in that case can be given and it can store in a memory.

[0055]Drawing 7 is a flow chart which shows the example of the flow of the search management in the AP server 3 in the operation mentioned above.

[0056]It is judged whether the AP server 3 received the find command from the client 1 via WEB server 2 (Step (henceforth S) 1). In S1 at the time of NO it does not shift to processing of S2 until it receives a find command.

[0057]If set to YES by S1 it will shift to processing of S2 and the AP server 3 will output the search directions according to the contents of the find command to DB server 4.

[0058]Next it is judged whether based on the state variable of a session object search of DB server 4 ended the AP server 3 (S3). When not judged as an end it is set to NO by S3 and does not shift to processing of S4. If set to YES by S3 the retrieval result data transmitted from DB server 4 will be changed into the format of the form which was able to be decided beforehand for example CSV XML format etc. (S4). And it saves in the memory area beforehand decided by the file name determined using the random number etc. (S5). (store)

[0059]The AP server 3 transmits the preservation destination indicative data for generating the screen containing the data in which the preservation destination of data is shown to the client 1 (S6). If it is judged whether the demand command of data transmission was received from the client 1 (S7) and a demand command is received it will be set to YES by S7 and will progress to processing of S8. In S8 the AP server 3 transmits the file of the demanded retrieval result data to the client 1 with a file transfer protocol.

[0060]Such processing is performed by the retrieval picture program of the AP server 3 the retrieval processing control program and conversion / preservation program. Generation of a session object mentioned above is performed separately.

[0061]As explained above according to the above-mentioned composition the user of the client 1 After inputting a search condition on the screen of drawing 2a retrieval execution button is clicked using a mouse etc. then the preservation destination display portion of retrieval result data is only clicked and even if retrieval execution time is long retrieval processing search results can be obtained easily and certainly. In particular there is no troublesome operation and since data is acquirable by FTP subsequent processing treatment etc. can also be performed smoothly.

[0062]Although the example using the http protocol which used the art of WEB explained the above it may be made to realize using a SOAP (Simple Object Access Protocol) protocol and a browser object.

[0063]The whole or part is recorded on portable media such as a floppy (registered trademark) disk and CD-ROM memory storage such as a hard disk etc. or the program code which performs processing explained above is memorized. The program code is read by computer and of operation [ all or a part of ] is performed. Or the whole or a part of the program code can be circulated or provided via a communication network. The user can realize the data base retrieval system of this invention easily by downloading the program code installing in a computer or installing in a computer from a recording medium



via a communication network.

[0064]As mentioned above although the suitable example of this invention was described in the present and the future by the meaning of this invention and within the limits various improvement is performed and a change can be made. Therefore the equivalent example made by the person skilled in the art is also within the limits of this invention.

[0065]

[Effect of the Invention]As explained above according to this invention the database retrieval from which a user can get easily the retrieval result data searched according to the find command from a terminal unit is realizable.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1]It is a system configuration figure of the data base retrieval system in connection with an embodiment of the invention.

[Drawing 2]It is an example of the search condition input screen of the data base retrieval system in connection with an embodiment.

[Drawing 3]It is a figure showing the example of the display screen which shows a user that it is during the search displayed on a client.

[Drawing 4]It is a figure showing the example of a screen for the end of search and the preservation destination of retrieval result data to be shown to a user.

[Drawing 5]It is a figure showing the example of the screen for asking a user about whether a search-results file is stored.

[Drawing 6]It is a figure showing the example of a screen for the preservation destination of the retrieval result data which should be accessed after the end of search to be shown to a user.

[Drawing 7]It is a flow chart which shows the example of the flow of search management processing operation of AP server.

[Description of Notations]

1 ... Client

2 ... WEB server

3 ... AP server

4 ... DB server

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